9.4.6 EQUIPMENT LEAK STANDARDS

The purpose of this portion of the Phase I Technical Review is to ensure that air emissions from equipment leaks are controlled at new and existing hazardous waste treatment storage and disposal facilities (TSDFs). The requirement can be found in Title 22, CCR, Chapter 14, Article 28: Air Emission Standards for Equipment Leaks, Section 66264.1050 through 66264.1065 (known as Subpart BB in 40 CFR 264 and referred to as such in this chapter). The requirements apply to: equipment that contains or contacts RCRA hazardous wastes with organic concentrations of a least 10 percent by weight; hazardous waste recycling units located at a hazardous waste management facility subject to Chapter 20 RCRA TSDF permit requirements. As with Subpart AA, the requirements were developed for the protection of public health and to control emissions from restricted land-disposal treatment technologies.

Subpart BB limits organic emissions from pumps, valves, compressors, sampling connection systems, open-ended valves or lines, pressure-relief devices, flanges, and other connectors. The standard requires that the owner/operator inspect and/or monitor equipment for leaks and repair any leaks detected. Each piece of equipment regulated under this requirement must be marked so that it can be distinguished easily from other equipment. The owner/operator must demonstrate compliance by maintaining records.

Before the permit writer can begin to investigate any equipment leaks, the permittee must provide a detailed listing of the equipment that contacts hazardous wastes with organic concentrations of at least 10 percent by weight. The following is a list of items the permit writer must request from the applicant:

1. A list of all affected equipment categorized by type (valve, pump, compressor, pressure relief device, open-ended valve or line, flange or other connector, and associated air emission control device or system);

2. The equipment identification number;

3. The equipment's associated hazardous waste management unit;

4. The location of each piece of equipment at the facility;

5. The percent by weight total organics in the hazardous waste stream for that equipment;

6. The physical state of the hazardous waste at the equipment (gas/vapor, light or heavy liquid);

7. A facility diagram which indicates the location of each piece of equipment by identification number and indicates the associated process unit; and

8. Performance test reports (if applicable).

KEY QUESTIONS

Does any of the specified equipment (valves, pumps, compressors, pressure relief devices, open-ended valves or lines, flanges or other connectors, and associated air pollution control equipment) come in contact with a RCRA listed waste that has an organic content of 10 percent or greater? (Title 22, CCR, Section 66264.1050)

If applicable, did the permittee follow the appropriate test methods to determine the organic content of the waste. Was a minimum of four samples collected? (Title 22, CCR, Section 66264.1063(d) through (I))

Different standards apply depending on the liquid's designation, therefore, has the applicant identified if the equipment is in light or heavy liquid service?

Did the applicant provide detailed plans and reports for the design, installation, operation, monitoring, and inspection of the equipment? (Section 66264.1052 through 1062)

Did the applicant choose to use a closed vent system and control device for compliance for vapor recovery control devices, enclosed combustion devices, and flares? If so, the permit should include a listing of each device by type. The equipment must be operated as specified in Section 66264.1060.

For pumps in light liquid service, does the applicant's plan specify that equipment will be monitored monthly for leaks using the approved methods in Section 66264.1063(b) (see Section 66264.1052(a)(1) for exceptions)? (Section 66264.1052)

Does the applicant have any compressors? Do the compressors meet the specifications outlined in Section 66264.1053? Is the applicant proposing to add a sensor or alarm to detect failure (Section 66264.1053(d))? Is the applicant proposing to check the compressor sensor daily and/or the compressor audible alarm monthly? (Section 66264.1053(e)(1))

Are all pressure relief devices certified by the applicant to be leakless (except during pressure releases), or is the device exempt because it is connected to a control device? (Section 66264.1054)

Are all sampling connections systems equipped with a closed purge system or closed-vent system? If the sampling system is in situ, it is exempt from the requirements? (Section 66264.1055)

Are all open-ended valves or lines equipped with a cap, blind flange, plug, or second valve? (Section 66264.1056)

Did the applicant choose to use the alternative standard for vapor tight valves in gas/vapor service or in light liquid service? If so, is the system certified so that no more than 2 percent of the valves will leak? (Section 66264.1061)

Is a list of all leakless valves provided by the applicant? Does the monitoring and inspection plan submitted by the applicant include a performance test? Does the permit require that the applicant perform a performance test on the leakless system annually and upon Department request? (Section 66264.1057(f))

For closed vent systems which are certified to be leak-free, does the applicant wish to use an alternative standard for the leak detection schedule specified? If so, is the applicant providing DTSC with documentation which certifies that the system is meeting compliance requirements, and therefore, the leak detection schedule can be extended (note: this only applies to certified leak-free systems)? (Section 66264.1062)

Does the applicant have any equipment in heavy liquid service? Is a list provided with the equipment listed by type? Does the applicant propose to monitor, inspect, and repair all valves, pumps, pressure relief devices, flanges, and other connectors according to the requirements? (Section 66264.1058)

REQUIRED OUTPUTS

APPLICABLE REGULATIONS AND STATUTES

State Laws and Regulations:

Title 22, CCR, California Code of Regulations

66254.1 Purpose and Scope and Applicability
Article 28 Air Emission Standards for Equipment Leaks
Sections
66264.1050 through 1065
66264.1033 through 1035
66264.11 ASTM Methods D-266267-88, D-2879-86, E-169-87, E-168-88, E-66260-85, 9060 or 8240 of SW-846

Health and Safety Code
Section
25200

Federal Laws and regulations:
Chapter 20 RCRA TSDF

40 CFR
Section 264.1
Part 60 Reference Method 21

Part 60 Subpart VV, or
Part 61 Subpart V

Other Laws and Regulations

POLICIES

DTSC Policies:

EPA Policies:

Other Policies:

INSTRUCTIONS TO APPLICANTS

Handouts to be Given to Applicants:

Examples to be Given to Applicants:

CEQA CONSIDERATIONS

PUBLIC PARTICIPATION CONSIDERATIONS

Has the facility had any past equipment leak that have put the community at risk or come to the attention of the community? Was the community satisfied with how the facility and the regulatory agency(ies) handled the incident(s)?

LEGAL CONSIDERATIONS

INTERAGENCY AGREEMENTS & MOUs

COORDINATION WITH OTHERS

Other Cal/EPA Agencies:

Air Resources Board

Other DTSC Units:

Local Air Districts:

U.S. EPA:

Environmental/Legislative/Industry Groups:

Special Requests:

STEP-BY-STEP PROCEDURES

Sample Collection

Organic samples must be collected at a point before the waste is exposed to the atmosphere, such as an enclosed pipe or other closed system used to transfer the waste after it is generated onsite. For waste generated offsite, the samples must be collected at the inlet to the first waste management unit that receives the waste. The waste must be transferred to the facility in a closed system and may not be diluted or mixed with other waste. (Section 66254.1063)

Emission Control Technology

The permit attachment for the emission control technology provisions must include the detailed plans and descriptions contained in the Part B application. The attachment must demonstrate how the applicant will meet the requirements of Sections 66264.1052 through 1062.

If the equipment must be installed, the permit should include the equipment installation date. Section 66264.1033(a)(2) requires that the equipment must be installed as soon as possible; however, the implementation schedule may take as long as 18 months (see the specific regulation for details).

Monitoring and Inspection Requirements

NOTE: The permit writer should structure the permit so that each type of equipment is listed in table format by equipment type. The permit conditions should proceed the equipment table that applies to that permit condition. There are several EPA examples available. Due to the diversity of TSDF operations, every permit will be different. Therefore, your permit may or may not include all of the equipment covered under the requirements.

Valves in Light Liquid Service (General) - must be monitored monthly using Reference Method 21, and must maintain a reading of less than 10,000 ppm. If no leaks are reported for two consecutive months, then monitoring is only required the first month of every quarter. However, if a leak is detected, monthly monitoring must resume. All leaks must be repaired no later than 15 calendar days after leak detection, and a first attempt at repair must be made as soon as possible. (Section 66264.1057 (a)-(e))

Leakless Valves - must be checked to ensure that no-detectable emissions are occurring (500 ppm above background as measured by Method 21), and must be checked annually and as requested by DTSC. (Section 66264.1057(f))

Valves Meeting the 2 Percent Emission Limit - total emissions can be no greater than 2 percent of all

valves leaking for a single hazardous waste management unit. The applicant must comply with the required notification, monitoring, and repair program. The valves can have no external actuating mechanism that contacts hazardous waste. The valves must also meet the 500 ppm above-background emission limits. Annual testing is required and upon DTSC's request using Reference Method 21. (Section 66264.1061)

Valves with a Skip-Period Leak Detection and Repair Program - total emissions must meet the 2 percent emission limit. If the limit is met after five consecutive quarterly leak detection periods, an applicant may elect to skip three of the quarterly leak detection periods. However, if the system has greater than 2 percent leaks, the applicant must monitor monthly according to the requirements in 66264.1057. The total percentage of leaks is calculated by using the following equation:

$$\frac{\text{\# leakless valves leaking}}{\text{total \# of leakless valves subject to rule}}$$

The leaks must be repaired as soon as possible, but no longer than 15 days. (Section 66264.1062)

Valves Unsafe to Monitor - some valves may be designated by the applicant as unsafe to monitor on a regular basis. Valves which are designated unsafe are located two meters above any support. The applicant must monitor unsafe valves at least once a year. A list of unsafe valves must be provided by the applicant, identifying each by number, and explaining why the valve is unsafe to monitor and a plan for monitoring each valve. Permit writers should also ask for a copy of this information and insert the information into the permit. (Section 66264.1057(g) and 1064(h))

Valves in Heavy Liquid Service - must be monitored by Method 21 within five days of indication of a leak by sight or alarm (the use of olfactory sense is not recommended). Leaks can be no greater than 10,000 ppm, and repairs must be made as soon as possible or no later than 15 days after detection. If it is determined that repairs are not practical, the applicant must follow the requirements under section 66264.1059. (Section 66264.1058)

Pumps in Light Liquid Service (General) - must be inspected weekly and monitored monthly using Reference Method 21, and must maintain a leak no greater than 10,000 ppm. The leak repair program must be followed. (Section 66264.1052(a)-(c))

Pumps with Duel Mechanical Seal Systems - include:

1. The barrier fluid pressure is above stuffing box pressure,

2. The barrier fluid degassing reservoir is connected to the closed vent system or control device, and

3. The barrier fluid is purged into the hazardous waste stream with no detectable emissions to the air.

These seals must be equipped with a sensor or audible alarm that is checked monthly to ensure that it is functioning properly. If the system is equipped with an audible alarm or sensor, the alarm must be checked monthly and the sensor must be checked daily. All repairs must be made as soon as practical but within 15 days. (Section 66264.1052(d))

Pumps with No Detectable Emissions - must be operated with no detectable emission (less than 500 ppm above background measured by Reference Method 21) and monitored initially upon designation, annually, and at the request of DTSC. No external actuated shaft may penetrate the pump housing. (Section 66264.1052(e))

Pumps with Closed Vent System - must capture and transport any leakage from the seal(s) to a control device and comply with the monitoring and inspection requirements of Section 66264.1060. (Section

66264.1052(d) & (f))

Pumps in Heavy Liquid Service - must be monitored within five days of visual or audible leak (olfactory detection is not recommended). The leak can be no greater than 10,000 ppm using Reference Method 21, and must be repaired as soon as possible but no later than 15 days (see Section 66264.1059 for exceptions). (Section 66264.1058)

Pressure Relief Devices in Light Liquid Service - must be operated with no detectable emissions (less than 500 ppm above background measured by Reference Method 21) and monitored (a schedule of monitoring frequency must be included in the permit) within 24 hours after each pressure release. If the system is connected to a control device, the system is exempt from the requirements, but must be operated according to Section 66264.1060. (Section 66264.1054)

Pressure Relief Devices in Heavy Liquid Service - must be monitored within five days of visual or audible leak (olfactory detection is not recommended). The leak can be no greater than 10,000 ppm using Reference Method 21, and must be repaired as soon as possible but no later than 15 days (see Section 66264.1059 for exceptions). (Section 66264.1058)

Compressors - all compressors with a seal system must have a barrier fluid system. Each compressor system shall also:

1. Operate with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

2. Be equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of 66264.1060; or

3. Be equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.

The barrier fluid cannot contain a hazardous waste greater than 10 percent organics by weight. Each compressor must be equipped with a sensor to detect failure of the seal system and/or the barrier fluid system. The compressors must be equipped with a sensor or audible alarm that is checked monthly using Reference Method 21, and the inspected weekly. If the system is equipped with an audible alarm or sensor, the alarm must be checked monthly and the sensor must be checked daily. All repairs must be made as soon as practical but within 15 days. (Section 66264.1053)

Closed Vent Systems and Control Devices - must be operated with no detectable emissions (less than 500 ppm above background measured by Reference Method 21). The regular monitoring schedule must be determined by the permit writer; however, monitoring is required annually and the request of DTSC. The applicant must ensure that the air monitoring device(s) readings are checked at least daily, and the applicant shall keep records to document compliance. (Section 66264.1060 & 66264.1033)

Open-ended Valves or Lines - must be equipped with a cap, blind flange, plug or second valve which is on at all times, except during use. If a second valve is used, it must be kept closed after the open-ended valve is closed. If a double block and bleed system is used, the bleed valve venting the line between the block valves must be closed at all other times. (Section 66264.1056)

Flanges and Other Connectors - must be monitored within five days of visual or audible leak (olfactory detection is not recommended). The leak can be no greater than 10,000 ppm using Reference Method 21, and must be repaired as soon as possible but no later than 15 days (see Section 66264.1059 for exceptions). (Section 66264.1058)

Recordkeeping and Reporting

The following information should be included in the permit and filed at the site: the identification number for each piece of equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight; the respective hazardous waste management unit identification; the location of each piece of equipment at the facility; the type of equipment (i.e., valve, pump, compressor, pressure relief device, open-ended valve or line, flange or other connector, associate air emission control device or system); and the physical state of the hazardous waste in the equipment (gas, light liquid, or heavy liquid). (Section 66264.1064(b)(1))

For facilities that must meet the requirements under Section 66264.1060 (air control devices), the applicant must include documentation of compliance in the Part B document. The documentation must be also filed at the facility (Section 66264.1035(b)(4)). If the applicant chooses to use source test data to prove compliance, a copy must be included in the Part B document and a copy kept on-site. (Section 66264.1035(b)(5))

When leaks are found, the applicant must follow the requirements pursuant to 66264.1064(d).

The applicant should provide to the permit writer, a copy of the documentation and monitoring, operating, and inspection information for all closed vent systems and control devices required to comply with the provisions of 66264.1064(e) and 66264.1035(c). This information must be filed at the facility and updated when changes are made.

Special provisions apply to applicants using alternative control devices. The permit writer will need to write the permit to specifically address that equipment. The inspection, monitoring, and recordkeeping requirements should be established at least as stringently as those for the acceptable control devices. (Section 66264.1035(f), & 66264.1052 through 1060, & 66264.1064(g))

Records must be kept for all valves (Section 66264.1064(h) - (k).

Semiannual Report

The applicant must submit a report semiannually to DTSC which contains the following information:

1. The identification number, name, and address of the facility;

2. The identification number of the equipment for each valve, pump, and/or compressor leak that was not repaired in accordance with the requirements;

3. The dates of hazardous waste management shutdowns, and where the control devices are in use;
4. The dates in each month during the reporting period when a control device exceeded or operated outside the design specifications as defined in 66264.1035(c)(4) as indicated by the control device monitoring required by 66264.1033(f) and was not corrected within 24 hours (66264.1065(a));

5. The duration and cause of excess emissions, and any corrective actions taken.
(Section 66264.1065)

ATTACHMENTS

The following plans or documents should be included in the permit as attachments:

1. Detailed plans and reports on the design, installation, operation, and maintenance of the equipment and the associated emission control devices.

2. Monitoring plan for unsafe/difficult to monitor valves.

3. Monitoring schedule for pressure relief devices with no detectable emissions.

4. Closed vent system and control device monitoring schedule.

5. Implementation schedule for closed vent systems and control devices.

Omnibus Permitting Authority

RCRA Section 3005 states that permits issued must include terms and conditions that are necessary to protect human health and the environment. Therefore, permit writers can require more stringent controls under the permit conditions. If necessary for protection of the public health and the environment, the permit can require an emission reduction of more than 95 percent, lower annual and hourly emissions cut off limits, and require leakless valves and sealless pumps. (Section 66270.32(b)(2))

TECHNICAL REFERENCES

U.S. EPA. December 1990. Workshop-Organic Air Emissions from Waste Management Facilities. Speaker Slide Copies and Supporting Information. Vol. I., CERI 90-124a. Office of Air Quality Standards, Research Triangle Park, North Carolina.

U.S. EPA. December 1990. Workshop-Organic Air Emissions from Waste Management Facilities. Speaker Slide Copies and Supporting Information. Vol. II., CERI 90-124b. Office of Air Quality Standards, Research Triangle Park, North Carolina.

EXAMPLES OF COMPLETED WORK PRODUCTS

TIMELINE AND PLANNING

Permit Processing Chart:

Workload Standards:

Statutory & Other Deadlines: